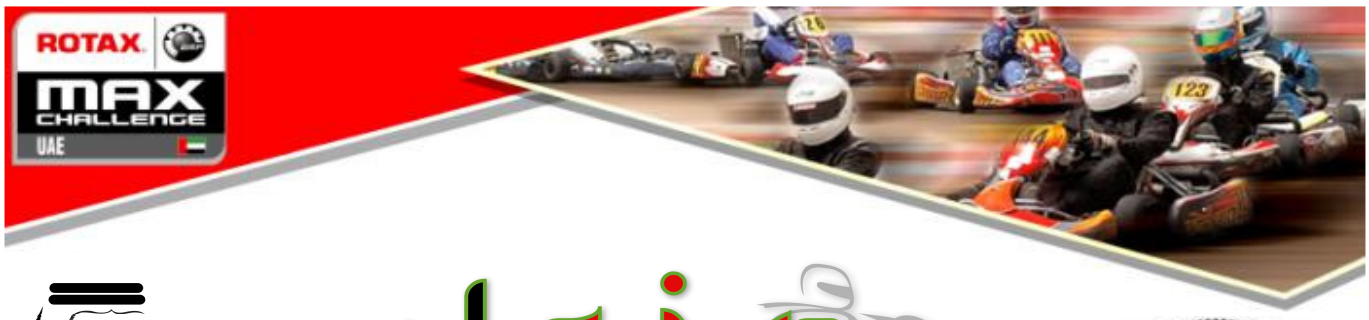


AL AIN RACEWAY KART CLUB CHAMPIONSHIP 2010/11
[UAE ROTAX MOJO MAX CHALLENGE]
Series Technical Regulations
Version 01.08.10

1. Categories:

Karts used in the AARKC Championship are divided into the following groups:

- ROTAX 125 Mini MAX * (cylinder capacity 125 cc)
- ROTAX 125 Junior MAX (cylinder capacity 125 cc)
- ROTAX 125 MAX (cylinder capacity 125 cc)
- ROTAX 125 MAX DD2 (cylinder capacity 125 cc, 2-speed)

* For ROTAX 125 Mini MAX please also see Appendix Mini MAX

2. Amount of equipment:

For each race event (from non-qualifying practice to the final) maximum following amount of equipment is allowed:
1 chassis
2 sets of dry tires + 1 front + 1 rear spare tire
2 sets of wet tires + 1 front + 1 rear spare tire
2 engines

3. Kart:

3.1 Chassis:

125 Junior MAX- and 125 MAX classes
For AARKC Championship any chassis sanctioned by Al Ain Raceway is allowed.
Maximum diameter of chassis tubing = 32 mm, round tubing only.
Maximum diameter of rear axle = 50 mm, minimum wall thickness according to CIK rules.
Any brake system must have a valid CIK-FIA homologation.
Front brakes are not allowed In the 125 Junior MAX class.
Front brakes are allowed in 125 MAX class only (including MAX Master).

125 MAX DD2 class

For AARKC Championship 125 MAX DD2 classes, chassis approved by BRP-ROTAX only are allowed to be used (approved chassis will be listed at the web page: www.maxchallenge-rotax.com).

Chassis must be designed according to CIK-FIA rules for shifter classes (front and rear brakes mandatory).

Any brake system must have a valid CIK-FIA homologation.

ROTAX Rear Tire Protection System is mandatory to be used. Either old 2 tube version or latest 3 tube version, third tube might be mounted above or below the 2 main tubes. No part shall be added or removed from original content.

3.2 Bodywork

125 Junior MAX and 125 MAX classes

In accordance with regulations of national Federations or CIK-FIA.

Only bodywork with current CIK-FIA homologation validity only is allowed, including the rear wheel protection system.

125 MAX DD2 class

In accordance with regulations of national Federations or CIK-FIA.

Only bodywork with current CIK-FIA homologation validity only is allowed. Only the current ROTAX rear wheel protection system is allowed.

4. Tyres

4.1 Dry tyres:

125 Mini MAX

Dry (slick) tires:	MOJO	Type:	D1		
		Front:	4.5 x 10.0 - 5	Rear:	7.1 x 11.0 - 5

125 Junior MAX

Dry (slick) tires:	MOJO	Type:	D1		
		Fro	4.5 x 10.0 - 5	Rear:	7.1 x 11.0 - 5

125 MAX / MAX Master:

Dry (slick) tires:	MOJO	Type:	D2		
		Fro	4.5 x 10.0 - 5	Rear:	7.1 x 11.0 - 5

125 MAX DD2 :

Dry (slick) tires:	MOJO	Type:	D3		
		Front:	4.5 x 10.0 - 5	Rear:	7.1 x 11.0 - 5

4.2 Wet tyres:

Wet tires:	MOJO	Type:	W2		
		Front:	4.0 x 10.0 - 5	Rear:	6.0 x 11.0 - 5

Strictly no modifications or tyre treatment allowed.

5. **Data acquisition:**

   Any data acquisition device for recording and displaying of any data is allowed.

6. **Composite materials:**
   Composite materials (carbon fibre etc.) are banned except for the seat and the floor tray.

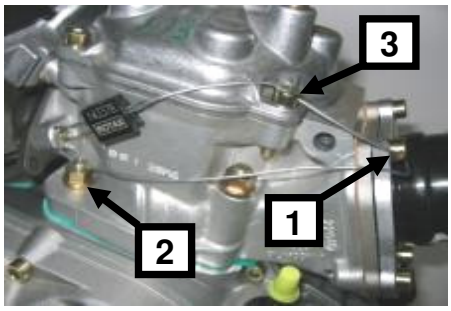
7. **Safety of equipment**
   Race suit, helmet, kart boots, gloves and other items of driver protection must comply with CIK regulations (see AARKC Sporting Regulations 2010-11).

8. **Petrol:**
   Unleaded commercial quality from petrol station, 95-98 octane.

9. **Engines**

   Only engines which have been checked and sealed by Al Ain Raceway (sanctioned UAE ROTAX Distributor) or one of their official authorised Service Centres are allowed to be used.

   By sealing an engine Al Ain Raceway and their Service Centres take over the responsibility for the conformity of the engine according to the valid Technical Specification. Also a brand new engine must be checked according to the Technical Specification before sealing.
   The engines have to be sealed with specific ROTAX engine seals (black anodised aluminium seal with "ROTAX "logo and a 6 digit serial number - see attached picture).
   By means of the steel cable the engine must be sealed on one Allen screw (1) of the intake flange, on one stud screw (2) of cylinder and one Allen screw (3) of the cylinder head cover (see attached pictures).



   At each new engine sealing Al Ain Raceway (or their Service Centres) is responsible for the following amendments to the Engine Identity Card [which belong to the owner of the engine].

- Serial no. of the engine
- Serial no. of the engine seal
- Stamp and signature of the company to be able to detect at scrutineering which authority has checked and sealed the engine.

At scrutineering the driver must present:

- the engine(s) with the undamaged engine seal(s)
- the Engine Identity Card(s), showing the matching engine serial no.(s), the matching engine seal no.(s) and the stamp(s) and signature(s) of the authority(ies) that has (have) checked and sealed the engine(s).

The sealing of engines helps to reduce the times for scrutineering at races as during the race event just the accessories (carburettor, exhaust, radiator…..) must be checked.

Of course scrutineers can request to open and re-check an engine according to the Technical Specification, before or after a race or in case of a protest. If an engine seal has been broken (for whatever reason), the engine has to be checked completely for compliance according to the Technical Specification. Re-sealing may only then be carried out at the discretion of Al Ain Raceway. If Al Ain Raceway suspects that an engine has been tampered with in any way, that engine will be excluded from competition and will not be resealed under any circumstances.

Genuine ROTAX components only, that are specifically designed and supplied for the 125 Junior MAX, 125 MAX and the 125 MAX DD2 engine are legal, unless otherwise specified.

Neither the engine nor any of its ancillaries may be modified in any way. "Modified" is defined as any change in form, content or function that represents a condition of difference from that originally designed. This is to include the addition and/or omission of parts and/or material from the engine package assembly unless specifically allowed within these rules. The adjustment of elements specifically designed for that purpose shall not be classified as modifications, i.e. carburretor and exhaust valve adjustment screws.

Internal additions:
No additional material may be added except in the case of engine repairs and shall only restore the engine or components to original specifications.

The use of thermal barrier coatings/ceramic coatings on or in the engine and on or in the exhaust system is prohibited.
The use of anti-friction coatings in or on the engine/engine components is prohibited.
Customizing the cylinderhead cover by painting is legal

Legal additions:
Chain guard, engine mount, temperature gauge and tachometer/hour meter, inline fuel filter, catch can mounting brackets and supplemental ignition coil mounting brackets, within the limits specified in this document.

Non-tech items:
Non-original fasteners, circlips, washers, electrical mass cable, throttle cable housing, fuel and pulse line (type and size) are allowed unless otherwise specified.

Note: When taking any dimensional reading, of the following technical regulation, in the order of accuracy of 0,1 mm or even more precise, the temperature of the part must be between +10°C and +30°C.

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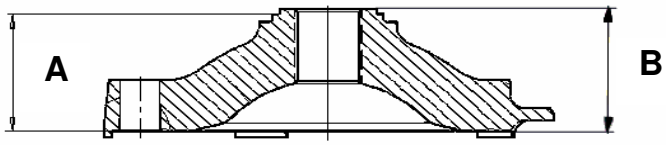
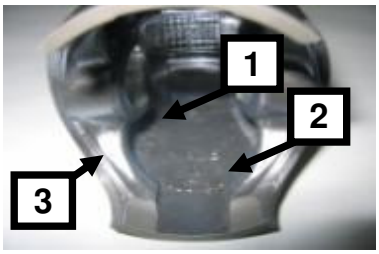
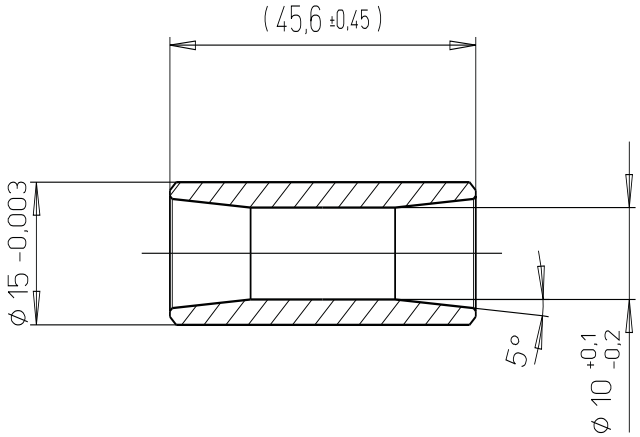
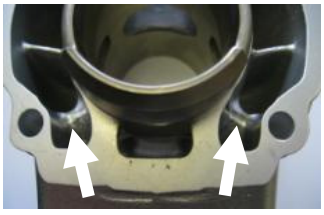
Note: Before taking any decision based on this regulation a check for available bulletins is mandatory. They can be found under www.maxchallenge-rotax.com

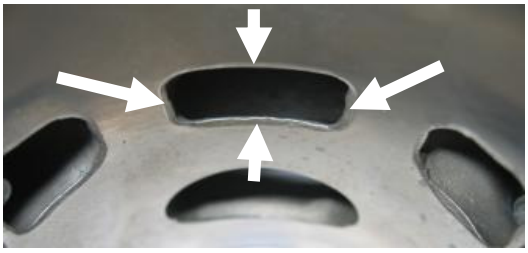
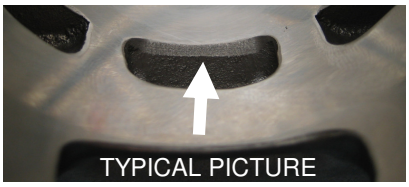
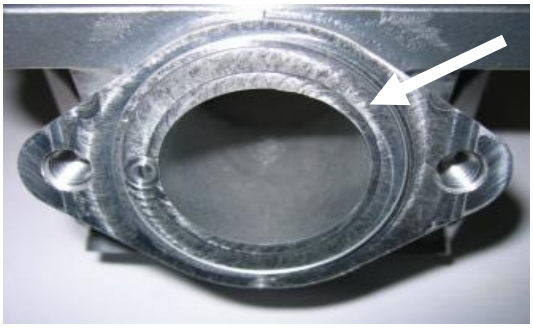
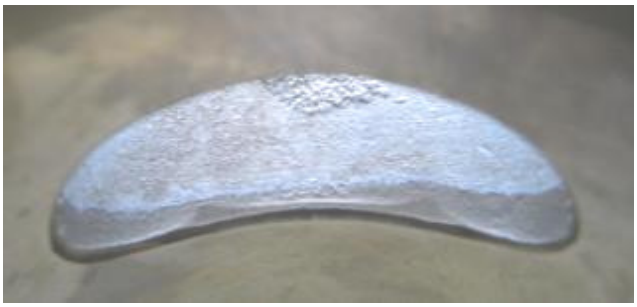
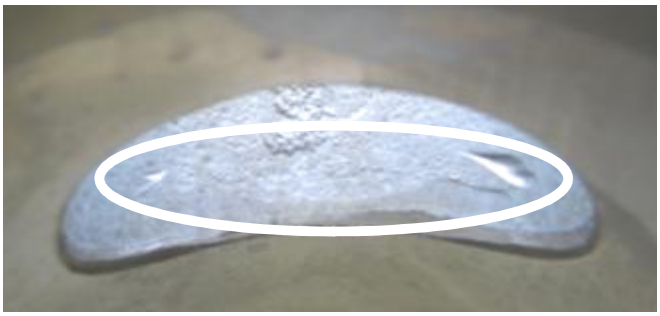
Technical Specification (within the engine seal) for ROTAX kart engines 125 Junior MAX (15 kW) and 125 Mini MAX and 125 MAX (21 kW).

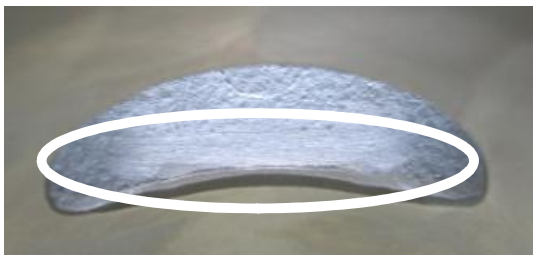
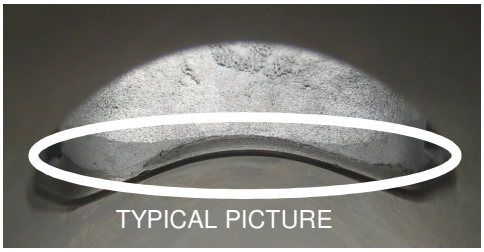
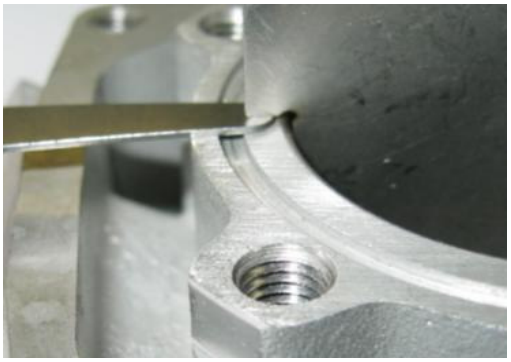
Please note that for engine configuration 125 Mini MAX, Technical Specification of 125 Junior MAX is valid for anything unspecified below.

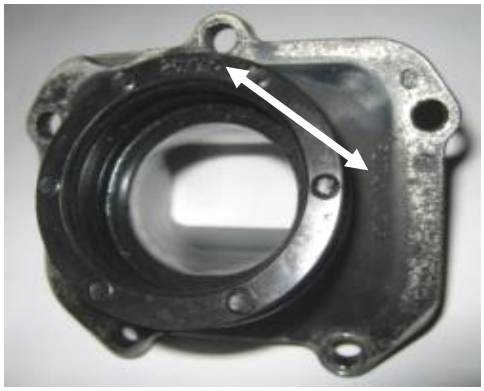
Squish gap	1.1 1.2	125 Junior MAX 1,20 mm - 1,80 mm 125 MAX 1,00 mm - 1,50 mm The squish gap must be measured with a certified slide gauge and by using a 2 mm tin wire. The crankshaft must be turned by hand slowly over TDC (top dead center) to squeeze the tin wire. The squish gap must be measured on the left and right side in the direction of the piston pin. The average value of the two measurements counts.
Combustion chamber insert	2.1 2.2	Cast identification code has to be "223 389" or "223 389 1" or "223 389 2" Casted wording "ROTAX" and/or "MADE IN AUSTRIA" must be shown.
	2.3	Heights of combustion chamber insert have to be 27,55 mm with a tolerance of +0,0/-0,1 mm (A) and 28,80 mm with a tolerance of +/- 0,2 mm (B). 
	2.4	The profile of the combustion chamber insert has to be checked with a template (ROTAX part no. 277 390). The crack of light between the template and the profile of the combustion chamber insert has to be the same over the whole profile. **NOTE:** This check is just for reference , in case of doubt detailed measurements have to be performed to define conformity or non conformity.

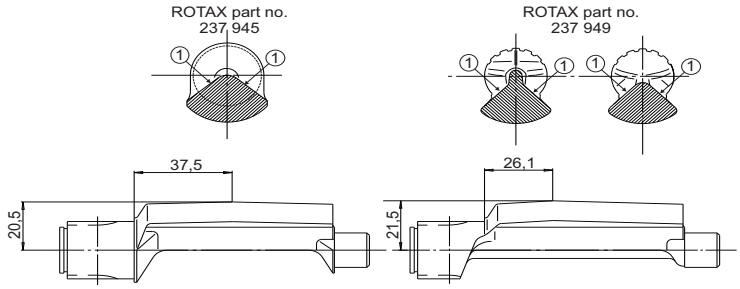
Piston with ring assy.	3.1	Original, coated or uncoated, aluminium, cast piston with one piston ring. The piston has to show on the inside the cast wording "ELKO" (1) and "MADE IN AUSTRIA" (2).
	3.2	Machined areas are: Top end of piston, outside diameter, groove for the piston ring, bore for the piston pin, inside diameter at bottom end of piston and some pre-existing factory removal (3) of flashing at the cut out of the piston skirt. All other surfaces are not machined and have cast surface. 
	3.3	Original, 1 mm, magnetic, rectangular piston ring. Piston ring is marked either with "E CRY K" or "ROTAX 215 547".
Gudgeon pin	4.1	Gudgeon pin is made out of magnetic steel.
	4.2	Dimensions must be according to the drawing.
	4.3	The minimum weight of the gudgeon pin must not be lower than 32,10 grams. 

Cylinder	5.1	Light-alloy-cylinder with GILNISIL-plating. Any re-plating of cylinder is not allowed.
	5.2	Cylinder with one main exhaust port.
	5.3	Maximum bore of cylinder = 54,035 mm (measured 10 mm above the exhaust port).
	5.4	Cylinder has to be marked with the "ROTAX" logo (see pictures below).
	5.5.1	**125 Junior MAX** Cylinder without pneumatic timed exhaust valve. Cylinder has to be marked either with identification code 223 999, 223 998 or 223994.
	5.5.2	**125 MAX** Cylinder with pneumatic timed exhaust valve. Cylinder has to be marked either identification code 223 997, 223996 or 223993.
	5.6	Height of cylinder has to be 87 mm -0,05/+0,1 mm.
	5.7.1	All transfer ports and passages have cast finish surface except some removal (done by the manufacturer) of cast burr at the inlet passage and exhaust port and passages. All ports have chamfered edges to prevent ring snagging. Any additional machining is not permitted. The top edge of exhaust port may show some pre-existing machining from the manufacturer. The sealing flange for the exhaust socket may show signs of machining from the manufacturer. 

	5.7.2	All ports have champfered edges. Any additional machining is not permitted.  On cylinders marked 223 993 and 223 994 the upper edge of the central boost port may show factory machining.  TYPICAL PICTURE
	5.7.3	The sealing flange for the exhaust socket may show either cast finish surface or signs of machining from the manufacturer. 
	5.7.4	The top edge of the exhaust port may show either just a cast finish surface…  or signs of a CNC machining … 

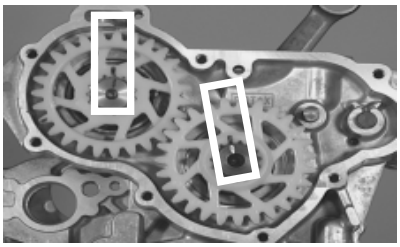
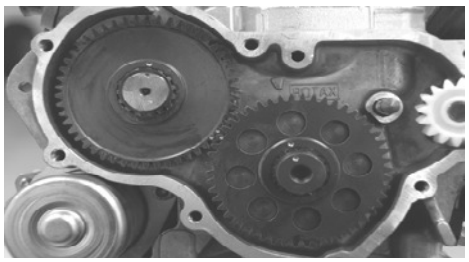
		or signs of CNC machining in combination with signs of manual grinding.  The exhaust port may show partial manual grinding done by the manufacturer to eliminate minor casting defects and to eliminate the NIKASIL burr at the end of the NIKASIL plating.  The exhaust ports of cylinders 223993 & 223994 may show factory machining all around.
	5.8.1	**Exhaust port timing** The "exhaust port timing" (distance from the top of the cylinder to the top of the exhaust port) has to be checked by means of the template (ROTAX part no. 277 397). Insert the template into the cylinder so that the template is touching the cylinder wall and the finger of the template is located in the middle of the exhaust port (highest point). Move the template upwards until the finger is touching the top edge of the exhaust port. Insert a feeler gauge between the top of the cylinder and the template. It must not be possible to fit the feeler gauge specified below. **125 Junior MAX: 0,90 mm for cylinder 223999/998** **125 Junior MAX: 1.10mm for cylinder 223994** **125 MAX: 0,75 mm** **For cylinder 223993 (125 MAX) it is also legal if the template does not fit in at all.** NOTE: Take care to use the corresponding gauge of the template (Junior or MAX) for the respective cylinder!
		

	5.9	**Exhaust valve (125 MAX only)** If the piston is moved in direction top of cylinder and first time covering completely the exhaust port, it must be possible to insert the exhaust valve gauge (ROTAX part no. 277 030) until it stops at the surface of the cylinder (a feeler gauge of 0,05 mm must not be possible to fit in).
Inlet system	6.1	Inlet manifold is marked with the name "ROTAX" and the identification code "267 915". 
	6.2	Some factory flash removal may be present at the conjunction of the inside contour and the carburettor stop mounting face. This is a manual trimming operation consisting of a small corner break of less than 3 mm in width. No additional grinding or machining is permitted.
	6.3	The reed valve assy. is equipped with 2 pedal stops and 2 reeds, each having 3 pedals.
	6.4	The thickness of the reeds is 0,6 mm +/- 0,08 mm.
Crankshaft	7.1	Stroke 54,5 mm +/-0,1 mm
	7.2	Con rod has to show forged numbers "213", "365" or "367" on shaft.
	7.3	Shaft of con rod is not machined (copper plated). Grinding or polishing of shaft of con rod is not permitted.

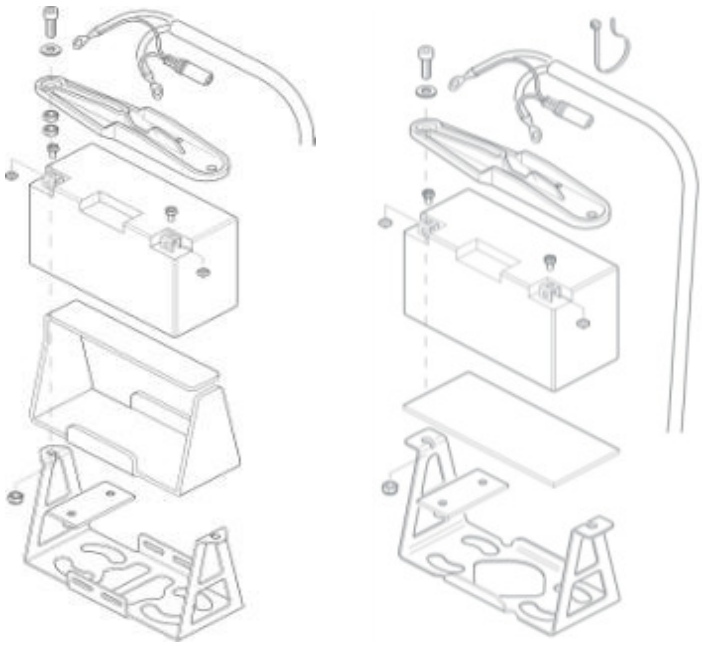
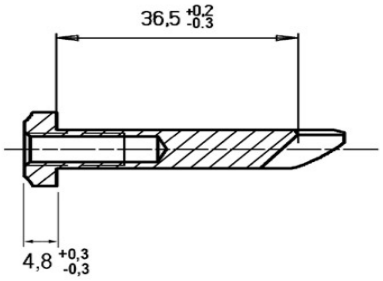
Balance shaft	8.1 8.2 8.3 8.4 8.5	Balance shaft and balance gears must be installed. Different configurations of part no. 237 945 and 237 949 (or 237 948) are legal. Surface (1) is not machined and must show cast surface. Measurement from center of balance shaft to outer diameter of fly weight of balance shaft at defined length must not be lower than specified. The minimum weigh of the dry balance shaft must not be lower than 355 grams for balance shaft ROTAX part no. 237 945 255 grams for balance shaft ROTAX part no. 237 949 (237 948). 
Crankcase	9.1	As supplied by the manufacturer. No grinding/polishing is permitted in the two main transfer passages as well as in the crank area.

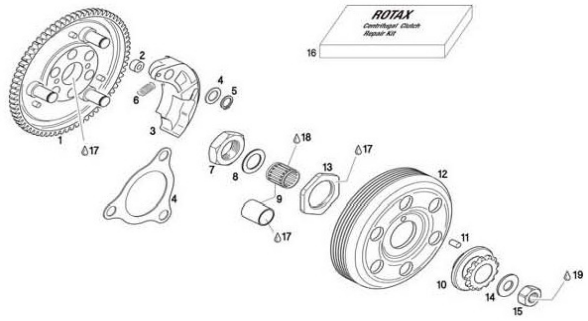
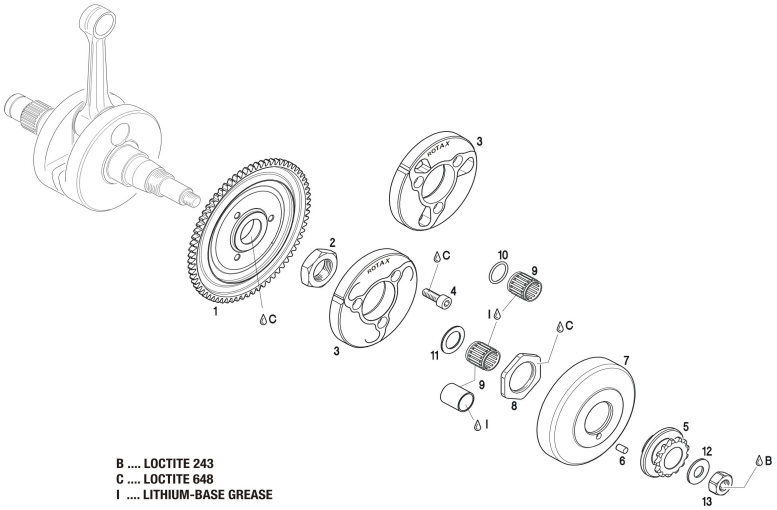
9.2 Technical Specification (outside the engine seal) for ROTAX kart engines 125 Junior MAX (15 kW) and 125 MAX (21 kW).

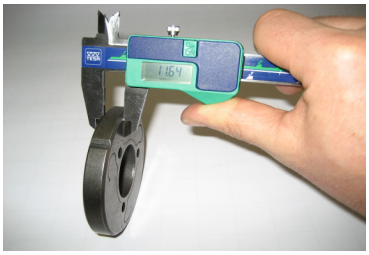
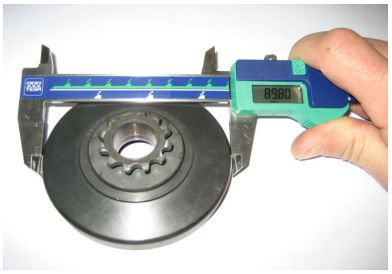
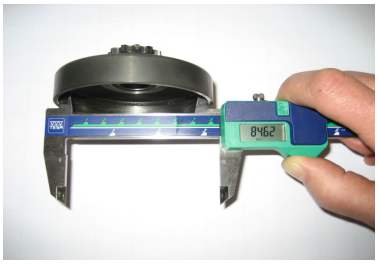
It is the responsibility of the competitor to check his equipment (all components outside the engine seal and mentioned below), to assure that his equipment is in line with the technical specification below!

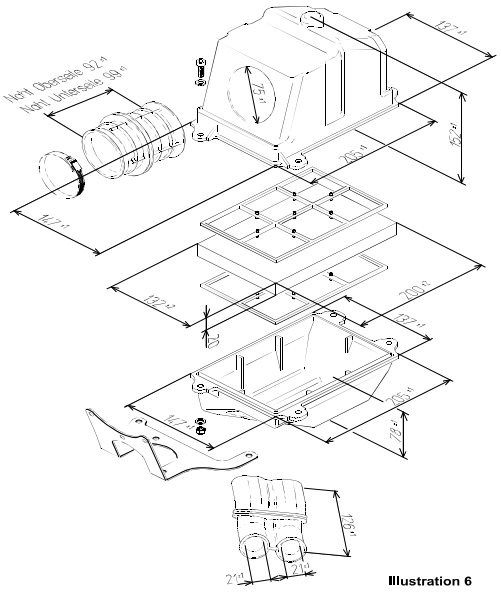
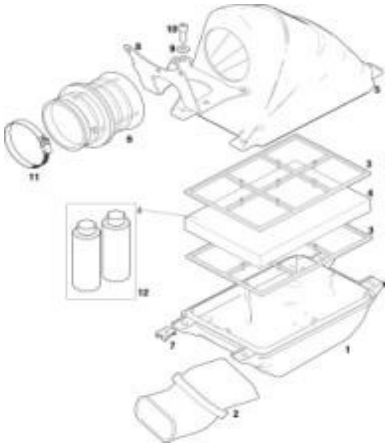
Balance drive	10.1	Balance gears must be installed and must be aligned according to the instruction in the repair manual. Old version "plastic" balance gears must only be used with old type centrifugal clutch. <u>Version 1</u> 
	10.2	Balance gears must be installed and aligned according to the instruction in the repair manual. New version "steel" balance gears can be used with old AND new type centrifugal clutches. <u>Version 2</u>  Mixing of steel balance gears of different width (6,0 and 9,0 mm) is strictly forbidden.

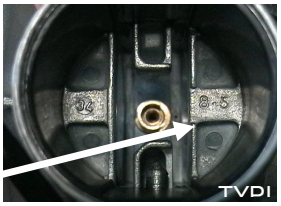
Ignition system	11.1	DENSO digital battery ignition, variable ignition timing, no adjustment necessary and possible. Race officials may request at any time that the competitor replace the ignition coil with a new unit provided by the race administration.
	11.2	The casting of the ignition coil has to show the following in casting "129000-" and "DENSO".
	11.3	Ignition coil must show 3 pins at the terminal.
	11.4	Connector housing of ignition coil must have either black or green color. Ignition coils 265572 & 265578 are permitted. 265571 (assembly) is not permitted.
	11.5	The ignition coil has to be fixed by means of 2 original silent blocks to the gearbox cover. Only in case of chassis component interference with the original mounting location of the ignition coil, a supplementary extension bracket, rigidly constructed and fabricated of solid metal, of minimum dimensions and attached to the original case mounting holes, is permitted for mounting of the coil.
	11.6	Minimum length of ignition wire (high tension wire) is 210 mm from outlet of cable at ignition coil to outlet of cable at spark plug connector (= the visible length of wire)
	11.7	The pick up must be marked with the numbers 029600-0710, followed by a variable production code in the 2nd line. HINT: In case of doubt an easy check is to place a steel ball (3-5 mm in diameter) on the pickup (engine side), the steel ball must stay in the center of the pickup surface.
	11.8	Spark plug: DENSO Iridium IW -27 or 29 or 31
	11.9	Spark plug cap must be marked with "NGK TB05EMA".
	11.10	Original battery must be used, **FIAMM**-GS type FGHL 20722 or FGH 20902 or **YUASA** 6,5 or **ROTAX** RX7-12B
	11.11	Battery must be fitted with the original battery clamp and battery cover (see illustration below) and must be fixed to the chassis with at least 2 screws. Position of the battery is free.
	11.12	Battery must be mounted with all components as shown in the illustration either like version 1 or like version 2.

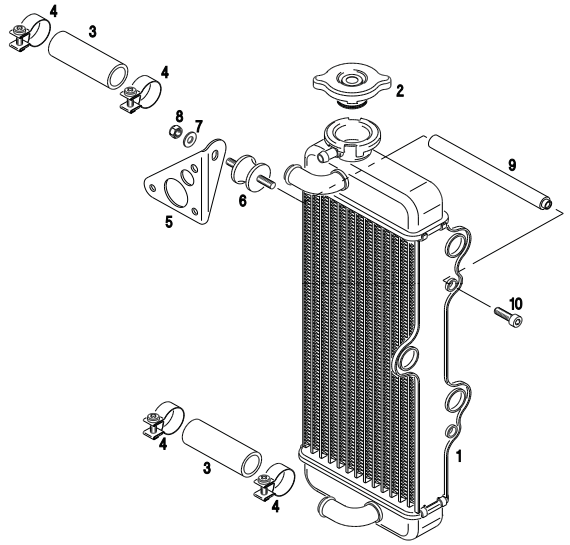
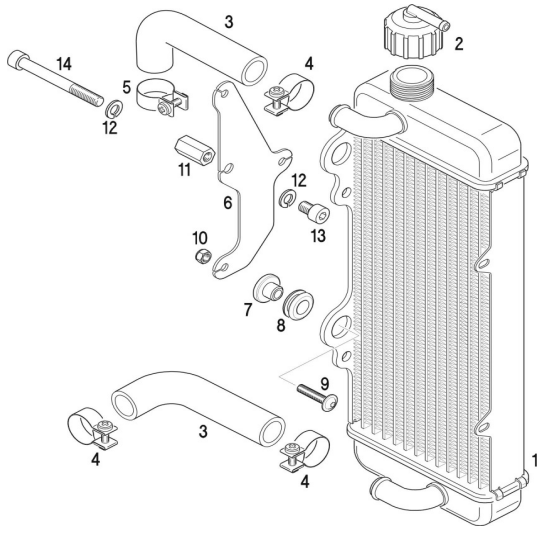
		Version 1 Version 2 
Exhaust valve		Configuration 125 MAX only!
	12.1	As supplied by the manufacturer with no modification allowed. Compression spring must be fitted.
	12.2	Length of the exhaust valve is 36,5 mm +0,20 mm /-0,30 mm.
	12.3	Width of collar is 4,8 mm +/-0,3 mm 

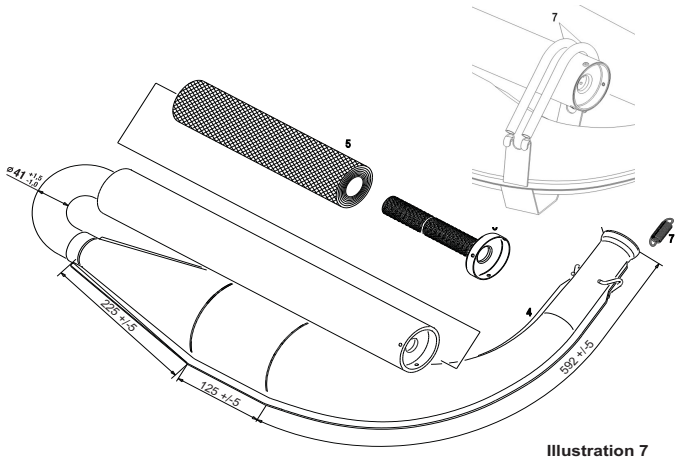
Centrifugal clutch	13.1	Dry centrifugal clutch, engagement r.p.m. maximum at 3.000 rpm, meaning that the kart (without driver) must start to move latest at an engine speed of maximum 3.000 r.p.m. This is valid for old as well as new centrifugal clutch. Old clutch version: 
	13.2	New steel clutch version. Clutch element may be untreated or nitrated. 
	13.3	Engines must be fitted with the new needle cage bearing 15X19X17 (item 9) as well as new O-Ring 12X2,5 (item 10) only EXCEPT if the plain bearing 15X17X20 (item 9) designed for 11teeth sprocket is used (in this case no O-ring may be used). No extra lubrication or additional substance allowed inside the clutch drum additional to the grease that originates from lubrication of the needle cage bearing and enters the clutch area. Picture shows worst case scenario in case grease exits the bearing area even O-Ring is installed. Only the fixation nut as well as inside of drum show signs of grease running surface of clutch is completely dry. In case Plain bearing for 11teeth sprocket is used clutch area must be absolutely free grease or any additional substance.

	13.4	New steel clutch (both versions) and clutch drum must be within following specifications:
	13.4.1	Height of clutch Minimum: 11,45 mm. 
	13.4.2	Thickness of clutch shoe Measurement has to be done at the 3 open ends of the clutch shoes, 5 - 10 mm from the machined groove (all clutch shoes must be completely closed at measurement - no gap). No measurement may be below 24,10 mm.
	13.4.3	Outer diameter of clutch drum  Diameter has to be measured with a sliding caliper just beside the radius from the shoulder (not at the open end of the clutch drum). Minimum diameter: 89,50 mm.
	13.4.4	Inner diameter of clutch drum  The inner diameter has to be measured with a sliding calliper. The measurement has to be done in the middle of the clutch drum (in the contact area of the clutch drum). Maximum diameter: 84,90 mm.
	13.4.5	Height of sprocket with clutch drum assy. Minimum height: 33,90 mm

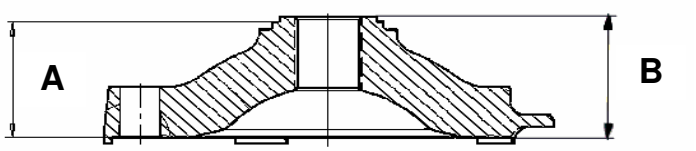
Intake silencer	14.1	Version 1 or version 2 of intake silencer with integrated, washable air filter has to be used with all parts as shown at illustration and has to be mounted on the support bracket with two screws (in dry and wet race condition). Version 1  Illustration 6 Version 2 
	14.2	For version 1 it is allowed to drill one hole with 8 mm diameter in the lower part of the intake silencer (in the center of the plastic injection mark) to automatically drain the intake silencer in case of heavy rain. This hole may stay unsealed also in dry condition.
	14.3	On version 2 the intake silencer case, bottom is marked on the inside with the ROTAX part no. 225 015.
	14.4	On version 2 the intake silencer case, top is marked on the inside with the ROTAX part no. 225 025.
	14.5	Air filter must be installed as shown in illustrations above.

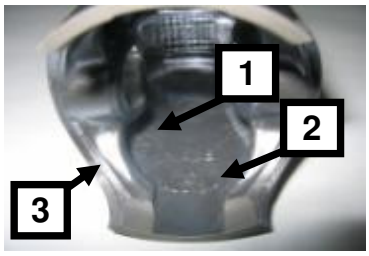
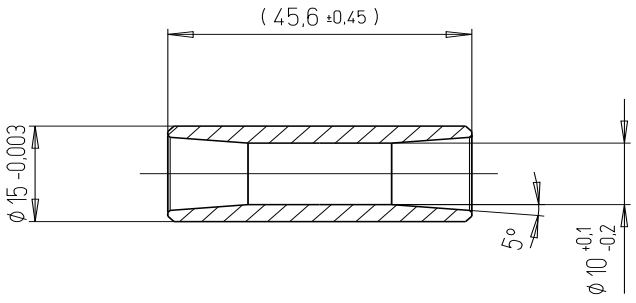
Carburettor	15.1	DELL'ORTO carburettor
	15.2	"VHSB 34" cast in the housing of the carburettor.
	15.3	"QD" or "QS" stamped in the housing of the carburettor.
	15.4	The complete inlet bore in the casing of the carburettor must show cast surface
	15.5	Needle jet stamped with "FN 266"
	15.6	The carburettor slide must show with size "40" in casting and the bottom end of the slide must show cast surface.
	15.7	Jet needle stamped with "K27" or "K98"
	15.8	Following two combination of floats and idle jets are legal:
	15.8.1	Combination 1: Floats are marked with "gr 5.2" Idle jet is stamped with the digits "30" Idle jet insert is stamped with the digits "30" Carb insert is 12.5 (see diagram)
	15.8.2	Combination 2: Floats are marked with "gr 3.6" Idle jet is stamped with the digits "60" Idle jet insert is stamped with the digits "60" Carb insert is 8.5 (see diagram)
		Position of carb insert number 8.5 or 12.5 
	15.9	Start jet is stamped with the digits "60"
	15.10	Settings of the carburettor adjustment screws are free.
	15.11	Main jets smaller than size 160 or bigger than 200 are not recommended by ROTAX (except in high altitude conditions)
	15.12	Main jets smaller than 158 are not permitted in the AARKC (UAE ROTAX MAX Challenge)
Fuel pump	16.1	MIKUNI diaphragm pump, must be mounted on the support bracket (on the bottom or sideways) for the intake silencer.
Fuel filter	17.1	The original fuel filter only (see attached picture) is allowed to be fitted between the fuel tank and the fuel pump. No additional parts except the fuel line, fuel pump as well as the original fuel filter are legal to be mounted between the fuel pump and the carburettor.

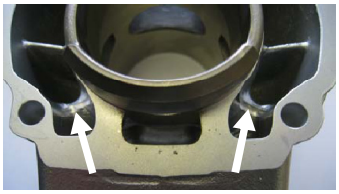
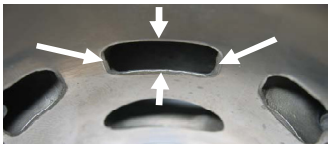
Radiator	18.1 18.2 18.3 18.4 18.5 18.6	Single aluminium radiator as shown in illustration Cooling area: Height = 290 mm, width = 133 mm Thickness of radiator = 32 mm Place of fixing the radiator is on right side of engine. Radiator must be mounted with all components as shown in the illustration either like version 1 or like version 2. No additional cooling device is allowed. Tape applied around the radiator is the only allowed air flow control. Tape may not be removed from the radiator during operation on the track. All other means of air flow control through the radiator are prohibited. The removal of the thermostat from the cylinder head cover is an acceptable configuration. Version 1  Illustration 5 Version 2 
Radiator coolant	19.1	As glycol coolants are prohibitted, plain water without any additives has to be used.

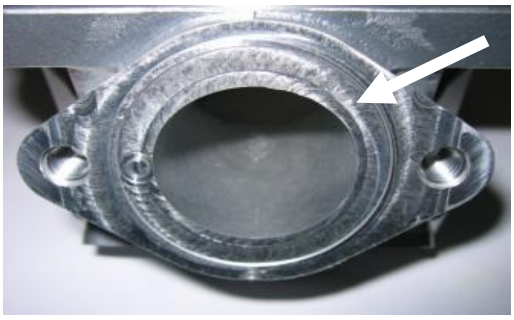
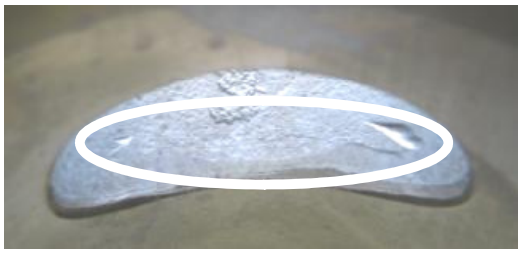
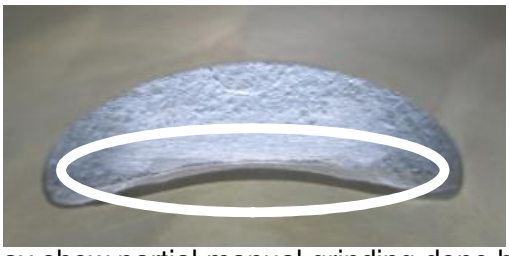
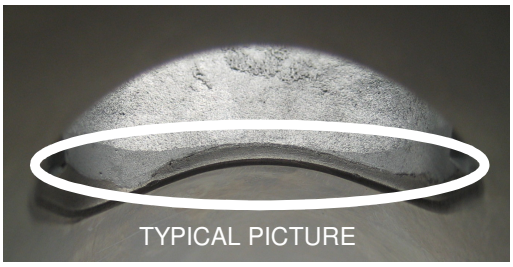
Exhaust system	20.1	Must be as supplied by ROTAX and cannot be modified except for the replacement of the silencer absorption material and the use of threaded fasteners in place of the rivets for securing the silencer end cap.
	20.2	Standard exhaust socket must be used.
	20.3	Exhaust pipe with after muffler as shown in illustrations. Both versions (version with welded on after muffler and version with after muffler fixed by 2 springs) are legal to be used.  Illustration 7
	20.4	Diameter of hole of end cap of (pos 6, illustration above): Max. 21,0 mm
	20.5	Length of inlet cone: 592 mm +/-5 mm (measured on outside from beginning of exhaust pipe until beginning of cylindrical part).
	20.6	Length of cylindrical part of exhaust pipe: 125 mm +/-5 mm.
	20.7	Length of end cone: 225 mm, +/-5 mm
	20.8	Outside diameter of 180° bent tube: 41mm +1,5 mm/–1,0 mm (measured at beginning and end of bend).
	20.9	Just one piece of original isolating mat is allowed to be used.
	20.10	The original exhaust system (tuned pipe and silencer) may not be modified, except for the addition of extra elements for further noise reduction.
	20.11	For measuring the exhaust gas temperature, it is allowed to weld on a socket on top of the exhaust, 50 mm from the ball joint.
	20.12	The use of maximum 4 pieces of original ROTAX exhaust springs to fix the exhaust to the cylinder is allowed. (no safety wire allowed in exhaust flange area).
Noise emissions	21.1	Noise isolating mat (see illustration exhaust system) has to be replaced by a original ROTAX spare part, if the noise emission is exceeding 92 dB (A).
	21.2	Noise emission measuring procedure: The measuring place has to be at section of the track where the engine is operated under full load at a rpm range of 11-12.000. The microphone has to be installed 1 meter above the level of the track in a rectangular angle to the track. The distance between the microphone and the kart on the ideal line on the track has to be 7,5 meters. The kart has to be operated under full load at the ideal line on the track.

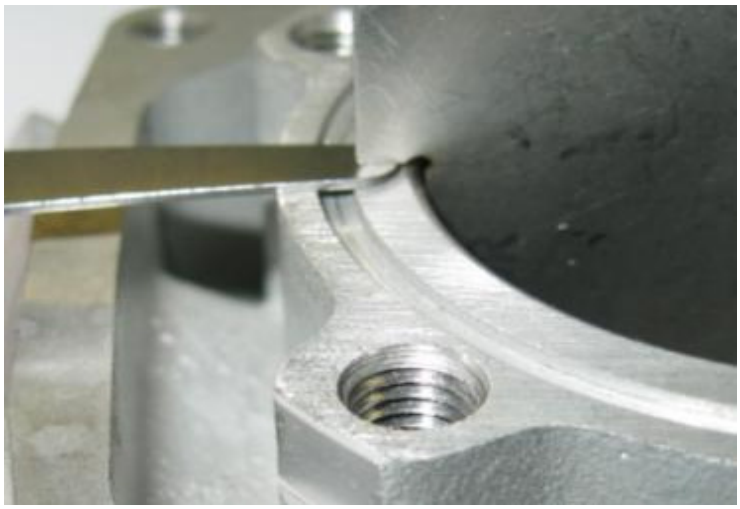
9.3 Technical Specification (within the engine seal) for ROTAX kart engine 125 MAX DD2 (24 kW).

Squish gap	1.1	125 MAX DD2 0,90 mm - 1,30 mm The squish gap must be measured with a certified slide gauge and by using a 2 mm tin wire. The crankshaft must be turned by hand slowly over TDC (top dead center) to squeeze the tin wire. The squish gap must be measured on the left and right side in the direction of the piston pin. The average value of the two measurements counts.
Combustion chamber insert	2.1 2.2	Cast identification code has to be "223 389" or "223 389 1" or "223 389 2" Casted wording "ROTAX" and/or "MADE IN AUSTRIA" must be shown.
	2.3	Heights of combustion chamber insert have to be 27,55 mm with a tolerance of +0,0/-0,1 mm (A) and 28,80 mm with a tolerance of +/- 0,2 mm (B). 
	2.4	The profile of the combustion chamber insert has to be checked with a template (ROTAX part no. 277 390). The crack of light between the template and the profile of the combustion chamber insert has to be the same over the whole profile. NOTE: This check is just for reference , in case of doubt detailed measurements have to be performed to define conformity or non conformity.

Piston with ring assy.	3.1	Original, coated or uncoated, aluminium, cast piston with one piston ring. The piston has to show on the inside the cast wording "ELKO" (1) and "MADE IN AUSTRIA" (2).
	3.2	Machined areas are: Top end of piston, outside diameter, groove for the piston ring, bore for the piston pin, inside diameter at bottom end of piston and some pre-existing factory removal (3) of flashing at the cut out of the piston skirt. All other surfaces are not machined and have cast surface. 
	3.3	Original, 1 mm, magnetic, rectangular piston ring. Piston ring is marked either with "E CRY K" or "ROTAX 215 547".
Gudgeon pin	4.1	Gudgeon pin is made out of magnetic steel.
	4.2	Dimensions must be according to the drawing.
	4.3	The minimum weigh of the gudgeon pin must not be lower than 32,10 grams. 

Cylinder	5.1	Light-alloy-cylinder with GILNISIL-plating. Any re-plating of cylinder is not allowed.
	5.2	Cylinder with one main exhaust port and two side exhaust ports.
	5.3	Maximum bore of cylinder = 54,035 mm (measured 10 mm above the exhaust port).
	5.4	Cylinder has to be marked with the "ROTAX" logo (see picture below).
	5.5	Cylinder with pneumatic timed exhaust valve. Cylinder has to be marked with the identification code 613 930, 613931 or 613933.
	5.6	Height of cylinder has to be 86,7 mm -0,05/+0,1 mm.
	5.7.1	All transfer ports and passages have cast finish surface except some removal (done by manufacturer) of of cast burr at the inlet passage. 
	5.7.2	All ports have champfered edges to prevent ring snagging. Any additional machining is not permitted.  On cylinders marked 613933 the upper edge of the central boost port may show factory machining.

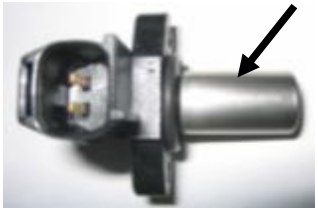
	5.7.3	The sealing flange for the exhaust socket may show either cast finish surface or signs of machining from the manufacturer. 
	5.7.4	The top edge of the exhaust port may show either just a cast finish surface… or signs of a CNC machining … 
		or signs of CNC machining in combination with signs of manual grinding...  The exhaust port may show partial manual grinding done by the manufacturer to eliminate minor casting defects and to eliminate the NIKASIL burr at the end of the NIKASIL plating.  TYPICAL PICTURE The exhaust port of cylinder 613933 may show factory machining all round.

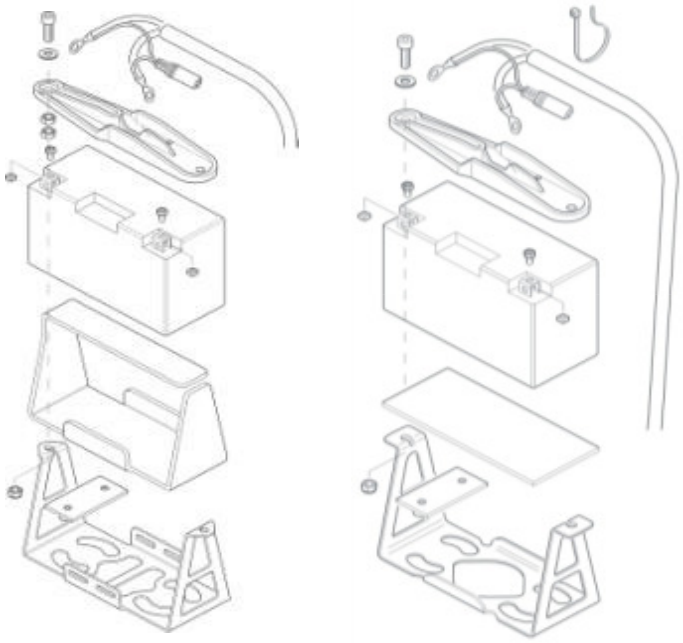
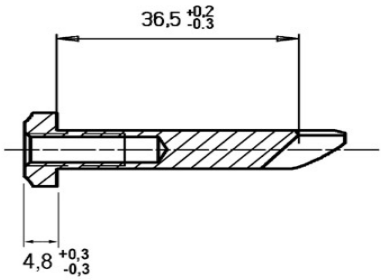
	5.8	**Exhaust port timing** The "exhaust port timing" (distance from the top of the cylinder to the top of the exhaust port) has to be checked by means of the template (ROTAX part no. 277 397). Insert the template into the cylinder, that the template is touching the cylinder wall and that the finger of the template is located in the middle of the exhaust port (highest point). Move the template upwards, until the finger is touching the top edge of the exhaust port. Insert a feeler gauge between the top of the cylinder and the template. It may not be possible to fit the feeler gauge specified below. **125 MAX DD2: 0,75 mm** For cylinder 613933 it is also legal if the template does not fit in at all. **NOTE:** Take care to use the corresponding gauge of the template (DD2) for the respective cylinder!
		
	5.9	If the piston is moved in direction top of cylinder and first time covering completely the exhaust port, it must be possible to insert the exhaust valve gauge (ROTAX part no. 277 030) until it stops at the surface of the cylinder (a feeler gauge of 0,05 mm must not be possible to fit in)).

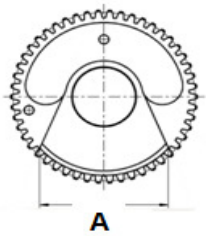
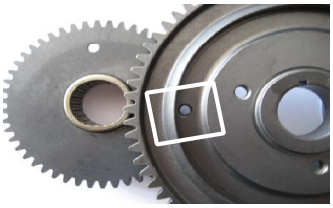
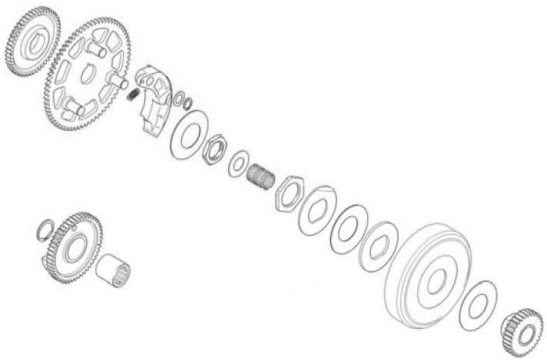
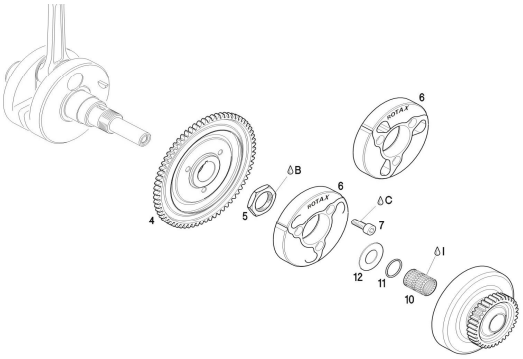
Inlet system	6.1	Inlet manifold is marked with the name "ROTAX" and the identification code "267 410".
	6.2	Some factory flash removal may be present at the conjunction of the inside contour and the carburettor stop mounting face. This is a manual trimming operation consisting of a small corner break of less than 3 mm in width. No additional grinding or machining is permitted.
	6.3	The reed valve assy. is equipped with 2 pedal stops and 2 reeds, each having 3 pedals.
	6.4	The thickness of the reeds is 0,6 mm +/- 0,08 mm.
Crankshaft	7.1	Stroke 54,5 mm +/-0,1 mm
	7.2	Con rod has to show forged numbers "213", "365" or "367" on shaft.
	7.3	Shaft of con rod is not machined (copper plated). Grinding of polishing of shaft of con rod is not permitted.
2-speed gearbox	8.1	Primary shaft with 19 teeth for 1st gear and 24 teeth for 2nd gear.
	8.2	Idle gear for 1st gear has to have 81 teeth.
	8.3	Idle gear for 2nd gear has to have 77 teeth.
Crankcase	9.1	As supplied by the manufacturer. No grinding/polishing is permitted in the two main transfer passages as well as in the crank area.

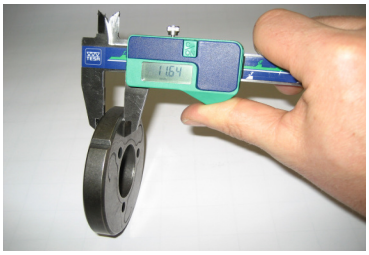
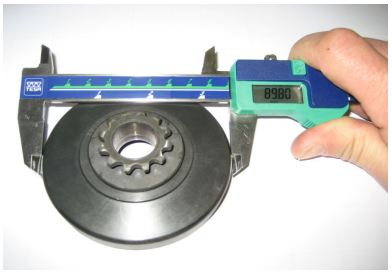
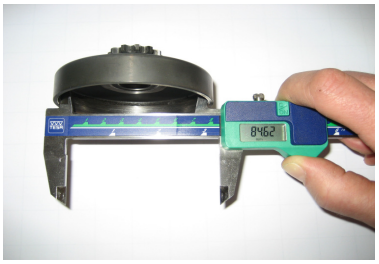
9.4 Technical Specification (outside the engine seal) for ROTAX kart engine 125 MAX DD2 (24 kW)

It is the responsibility of the competitor to check his equipment (all components outside the engine seal and mentioned belwo), to assure that his equipment is in line with the technical specification below!

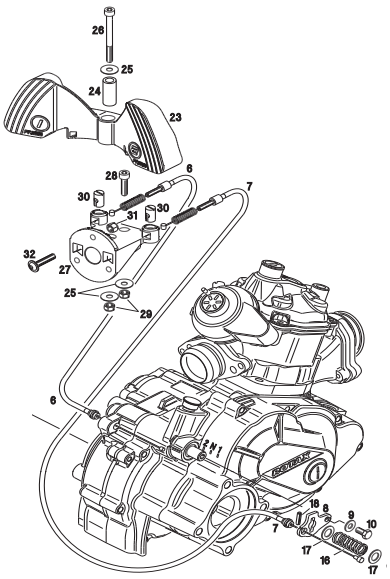
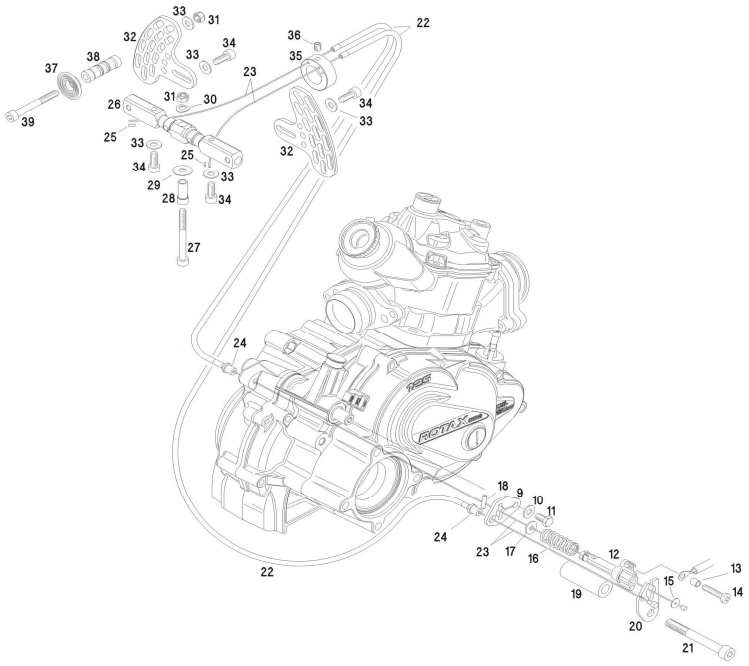
Ignition system	10.1	DENSO digital battery ignition, variable ignition timing, no adjustment necessary and possible. Race officials may request at any time that the competitor replace the ignition coil with a new unit provided by the race administration.
	10.2	The casting of the ignition coil has to show the following in casting "129000-" and "DENSO".
	10.3	Ignition coil must show 4 or 6 pins at the terminal.
	10.4	The connector housing of the ignition coil must have either white or grey colour.
	10.5	The ignition coil has to be fixed by means of 2 original silent blocks to the crankcase. Only in case of chassis component interference with the original mounting location of the ignition coil, a supplementary extension bracket, rigidly constructed and fabricated of solid metal, of minimum dimensions and attached to the original case mounting holes, is permitted for mounting of the coil.
	10.6	Minimum length of ignition wire (high tension wire) is 210mm from outlet of cable at ignition coil to outlet of cable at spark plug connector (= visible length of wire)
	10.7	The pick up must be marked with the numbers 029600-0710, followed by a variable production code in the 2nd line.  HINT: In case of doubt an easy check is to place a steel ball (3-5 mm in diameter) on the pickup (engine side), the steel ball must stay in the center of the pickup surface.
	10.8	Spark plug: DENSO Iridium IW 27 or 29 or 31
	10.9	Spark plug cap must be marked with "NGK TB05EMA".
	10.10	Original battery must be used: **FIAMM-GS** type FGHL 20722 or FGH 20902 or **YUASA** 6,5 or **ROTAX** RX7-12B

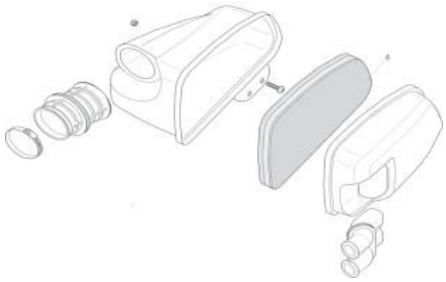
	10.11	Battery must be fitted with the original battery clamp and battery cover (see illustration below) and must be fixed to the chassis with at least 2 screws. Position of the battery is free. RM1 kart has to have fitted the battery on the left side in front of the radiator. Original battery clamp and battery cover must be used.
	10.12	Battery must be mounted with all components as shown in the illustration either like version 1 or like version 2.
		Version 1 Version 2 
Exhaust valve	11.1	As supplied by the manufacturer with no modification allowed. Compression spring must be fitted.
	11.2	Length of the exhaust valve is 36,5 mm +0,20 mm/-0,30 mm.
	11.3	Width of colar is 4,8 mm +/-0,3 mm 

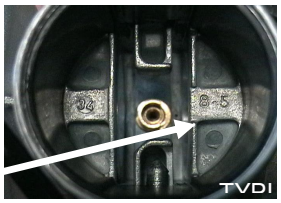
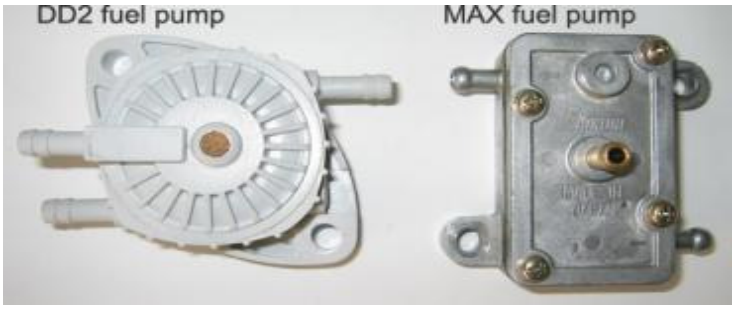
Balance drive	12.1 12.2 12.3	Balance drive gear must be fitted on crank shaft. Balance gear must be fitted on primary shaft and must be aligned with the balance drive gear according to the instruction in the repair manual. Fly weight of balance gear must show cast surface (old version only). New version:   Fly weight of balance gear can show machined surface (new version only). Dimension A (widest part of balance weight) must be either 53 mm +/- 0,5 or 57 mm +/- 0,5 The minimum weight of a dry balance gear including bearing (new version only) must not be lower than 240g
Centrifugal clutch	13.1	Dry centrifugal clutch, engagement maximum at 4.000 r.p.m. That means that the kart (without driver) must start to move at an engine speed of maximum 4.000 r.p.m. (LATEST) This is valid for old and new clutch types. Old clutch:  New clutch: 

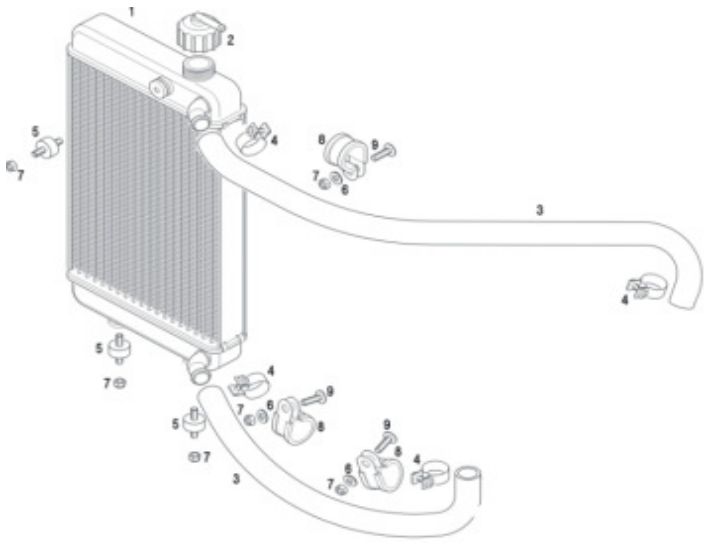
	13.3	Steel clutch and clutch drum of new clutch version must be within following specifications:
	13.3.1	Height of clutch Minimum: 14,45 mm. 
	13.3.2	Thickness of clutch shoe Measurement has to be done at the 3 open ends of the clutch shoes, 5 - 10 mm from the machined groove (all clutch shoes must be completely closed at measurement - no gap). No measurement may be below 24,10 mm.
	13.3.3	Outer diameter of clutch drum  Diameter has to be measured with a sliding caliper just beside the radius from the shoulder (not at the open end of the clutch drum). Minimum diameter: 89,50 mm.
	13.3.4	Inner diameter of clutch drum  The inner diameter has to be measured with a sliding calliper. The measurement has to be done in the middle of the clutch drum (in the contact area of the clutch drum). Maximum diameter: 84,90 mm.
	13.3.5	Height of sprocket with clutch drum assy. Minimum height: 33,90 mm

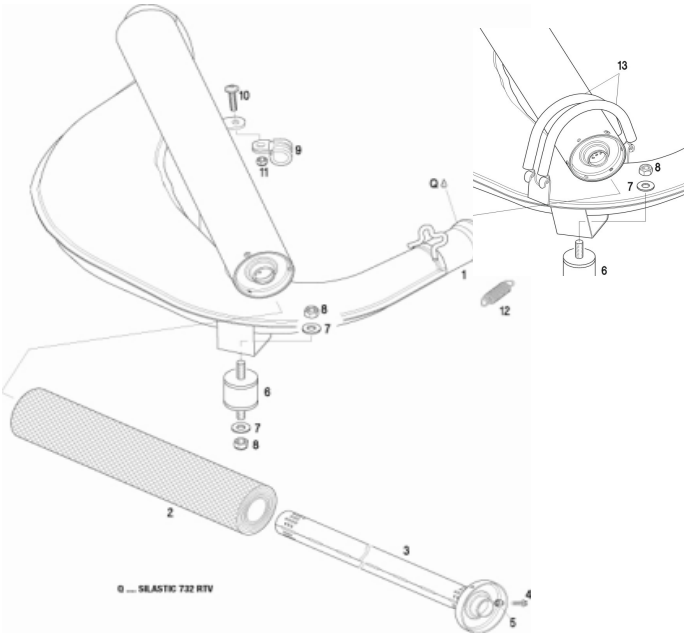
Primary drive	14.1	Original primary drive gears of following gear ratio options must be used. Drive gear Driven gear 32 65 33 64 34 63 35 62 36 61 37 60 38 59
	14.2	A specific primary gear ratio may be determined for each race event by a “Supplementary Regulation”.

Gear shifting	15.1	The 2-speed gearbox has to be operated with one of the 2 available original supplied shift paddle configurations on the steering wheel via the two cable bowden.
	15.2	Cutting of the original shift paddle or adding of pads to the shift paddle is allowed to adjust the paddle to specific steering wheels (for plastic paddle only) . For aluminium paddle version no cutting or adding of non original parts or material is allowed.
	15.3	Original hub for steering wheel must be used for plastic paddle only. Version 1 (plastic paddle):  Version 2 (aluminium paddle): 

Intake silencer	16.1	Intake silencer with integrated, washable air filter as shown in illustration below.
	16.2	The intake silencer case is marked on the inside with the ROTAX part no. 225 012.
	16.3	The intake silencer cover is marked on the inside with the ROTAX part no. 225 022.
	16.4	The air filter is marked with the ROTAX part no. 225 052.
	16.5	The air filter must be assembled between the intake silencer case and the intake silencer cover that the whole area of the intake silencer case is covered.
	16.6	In case of a wet race it´s allowed to seal the top of the airbox using adhesive tape. 
Carburettor	17.1	DELL'ORTO carburettor
	17.2	"VHSB 34" cast in the housing of the carburettor.
	17.3	"QD" or "QS" stamped in the housing of the carburettor.
	17.4	The complete inlet bore in the casing of the carburettor must show cast surface
	17.5	Needle jet stamped with "FN 266"
	17.6	The carburettor slide must show with size "40" in casting and the bottom end of the slide must show cast surface.
	17.7	Jet needle stamped with "K27" or "K98"
	17.8	Following two combination of floats and idle jets are legal:
	17.8.1	Combination 1: Floats are marked with "gr 5.2". Idle jet is stamped with the digits "30" Idle jet insert is stamped with the digits "30" Carb insert is 12.5 (see diagram)

	17.8.2	Combination 2: Floats are marked with “gr 3.6” Idle jet is stamped with the digits “60” Idle jet insert is stamped with the digits “60" Carb insert is 8.5 (see diagram) Position of carb insert number 8.5 or 12.5 
	17.9	Start jet is stamped with the digits “60”
	17.10	Settings of the carburettor adjustment screws are free.
	17.11	Main jets smaller than 175 are not permitted in the AARKC (UAE ROTAX MAX Challenge)
Fuel pump	18.1	Original diaphragm fuel pump (grey or black colour) must be fitted by means of two original silent blocks to the chassis or the engine. Optionally the MIKUNI diaphragm pump (as used on the 125 MAX engine) can be used. 
	18.2	Center line of fuel pump may not be higher than the center line of the carburettor.
Fuel filter	19.1	The original fuel filter only (see attached picture) is allowed to be fitted between the fuel tank and the fuel pump. No additional parts except the fuel line, the fuel pump as well as the original fuel filter are legal to be mounted between fuel tank and carburettor.

Radiator	20.1	Single aluminium radiator (see illustration below).
	20.2	Name "ROTAX" is stamped in the top of the radiator.
	20.3	Cooling area: Height = 284 mm, width = 202 mm
	20.4	Thickness of radiator = 32 mm
	20.5	The radiator must be mounted on the left side side of the kart beside the seat.
	20.6	The highest point of the radiator with cap may not be higher than 400 mm above the main tube of the kart chassis.
	20.7	No additional cooling device is allowed. Tape applied around the radiator is the only allowed air flow control. Tape may not be removed from the radiator during operation on the track. All other means of air flow control through the radiator are prohibited.
	20.8	The removal of the thermostat from the cylinder head cover is an acceptable configuration.
		
Radiator coolant	21.1	As glycol coolants are prohibitted, plain water without any additives has to be used.

Exhaust system	22.1	Must be as supplied by ROTAX. Cannot be modified except for replacement of silencer absorption material and the use of threaded fasteners in place of rivets to secure silencer end cap.
	22.2	Standard exhaust socket must be used.
	22.3	Both versions (version with welded on after muffler and version with after muffler fixed by 2 springs) are legal to be used (see illustration below): 
	22.4	Diameter of hole of end cap of (pos 5, illustration above): 19,6 mm +/-0,2 mm.
	22.5	Just one piece of original isolating mat is allowed to be used.
	22.6	The original exhaust system (tuned pipe and silencer) may not be modified, except for the addition of extra elements for further noise reduction.
	22.7	For measuring the exhaust gas temperature, it is allowed to weld on a socket on top of the exhaust, 50 mm from the ball joint.
	22.8	The use of maximum 4 pieces of original ROTAX exhaust springs to fix the exhaust to the cylinder is allowed. (no safety wire allowed in exhaust flange area).
Noise emissions	23.1	Noise isolating mat (see illustration exhaust system) has to be replaced by a original ROTAX spare part, if the noise emission is exceeding 94 dB (A).
	23.2	Noise emission measuring procedure: The measuring place has to be at section of the track where the engine is operated under full load and at a rpm range of 11.000 to 12.000 rpm. The microphone has to be installed 1 meter above the level of the track in a rectangular angle to the track. The distance between the microphone and the kart on the ideal line on the track has to be 7,5 meters. The kart has to be operated under full load at the ideal line on the track.

APPENDIX MINI MAX
VERSION 01.08.10

Technical Specification for ROTAX kart engine 125 Mini MAX (10kW)

Please note that, regarding 125 Mini MAX, technical specification for engine configuration 125 Junior MAX is valid for anything unspecified below.

Squish gap	A1	125 Mini MAX 1,20 mm - 1,80 mm The squish gap must be measured with a certified slide gauge and by using a 2 mm tin wire. The crankshaft must be turned by hand slowly over TDC (top dead center) to squeeze the tin wire. The squish gap must be measured on the left and right side in the direction of the piston pin. The average value of the two measurements counts.
Intake Restrictor	A2.1 A2.2 A2.3	The intake restrictor (ROTAX part no. 267 535) must be fitted between the carburettor flange and the carburettor. The intake restrictor must show an inner diameter of 19,0 mm +0,0/-0,2 mm. The intake restrictor must show a blue anodised surface.
Exhaust Restrictor	A3.1 A3.2	The exhaust restrictor (ROTAX part no. 273 972) must be used instead of the original exhaust socket (fitted to the cylinder). The exhaust restrictor must show an inner-diameter of 22,0 mm +0,2/-0,2 mm.
Noise emissions	A4.1 A4.2	Noise isolating mat (see illustration exhaust system) has to be replaced by a original ROTAX spare part, if the noise emission is exceeding 90 dB (A). Noise emission measuring procedure: The measuring place has to be at section of the track where the engine is operated under full load and at a rpm range of 9.000 to 10.000 rpm.